

Application Serial No: 09/983,047
In reply to Office Action of 03 September 2003

Attorney Docket No. 78381

AMENDMENTS TO THE CLAIMS

1. (newly amended) A sensing device which comprises:

at least one optical fiber supported at two ends in a
structure with a fiber portion between the two
ends unsupported by the structure;

a movable mass ~~supported~~ suspended within the
structure by the unsupported portion of the at
least one optical fiber; and

means for detecting changes in tension in said at
least one optical fiber due to movement of said
movable mass.

2. (original) A sensing device according to claim 1,
wherein said detecting means comprises at least one fiber
optic Bragg grating written into a core of each of said
optical fibers.

3. (newly amended) A sensing device ~~according to claim 2~~
~~wherein~~ which comprises:

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at least one optical fiber supported in a structure;

a movable mass supported within the structure;

means for detecting changes in tension in said at
least one optical fiber due to movement of said
movable mass;

said detecting means comprising at least one fiber
optic Bragg grating written into a core of each
of said optical fibers;

said sensing device ~~has~~ having a plurality of optical
fibers and a first fiber optic Bragg grating
associated with a first one of said optical
fibers ~~has~~ having a first reflective wavelength
and a second fiber optic Bragg grating associated
with a second one of said optical fibers ~~has~~
having a second reflective wavelength, which
second reflective wavelength is different from
said first reflective wavelength.

4. (original) A sensing device according to claim 2
wherein said detecting means comprises a plurality of fiber

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optic Bragg gratings associated with each of said optical fibers.

5. (original) A sensing device according to claim 4, wherein each of said fiber optic Bragg gratings associated with each of said optical fibers has a different reflective wavelength.

6. (original) A sensing device according to claim 1, wherein said detecting means comprises a fiber optic Bragg grating laser sensor associated with each of said optical fibers.

7. (newly amended) A sensing device ~~according to claim 1~~ further comprising which comprises:

a plurality of optical fibers supported in ~~said~~ a
structure;

a movable mass supported within the structure;

means for detecting changes in tension in said at
least one optical fiber due to movement of said
movable mass; and

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said movable mass being surrounded by said optical
fibers and being in contact with said optical
fibers.

8. (original) A sensing device according to claim 7,
wherein said structure comprises a cage.

9. (original) A sensing device according to claim 8
further comprising a gap between each side of said mass and
said cage and said gap being sufficiently small to limit
motion of said mass in shock or high acceleration and to
limit the maximum tension seen by each of said optical
fibers.

10. (newly amended) A sensing device ~~according to claim 1~~
~~wherein~~ which comprises:

at least one optical fiber supported in a structure;

a movable mass supported within the structure;

means for detecting changes in tension in said at
least one optical fiber due to movement of said
movable mass; and

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said sensing device ~~has~~ having a single optical fiber
having a serpentine configuration with a
plurality of legs and wherein said detecting
means comprises a detector in each of said legs.

11. (newly amended) A sensor for detecting roll in a towed
array, said sensor comprising:

a plurality of optical fibers supported at two ends in
a structure, each said optical fiber having a
fiber portion between said two ends unsupported
by said structure;

a movable mass ~~supported~~ suspended within the
structure by the unsupported portions of said
optical fibers; and

means for detecting changes in tension in each of said
optical fibers due to movement of said movable
mass.

12. (original) A sensor according to claim 11 wherein said
optical fibers are the only deformable structure within the
sensor.

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13. (newly amended) A sensor for detecting pitch in a
towed array comprising:

a plurality of optical fibers supported at two ends in
a structure, each said optical fiber having a
fiber portion between said two ends unsupported
by said structure;

a movable mass ~~supported~~ suspended within the
structure by the unsupported portions of said
optical fibers; and

means for detecting changes in tension in each of said
optical fibers due to movement of said movable
mass.

14. (original) A sensor according to claim 13 wherein
said optical fibers are the only deformable structures in
said sensor.